

REMARKS

I. Introduction

In response to the Office Action dated April 3, 2007, the claims have not been amended. Claims 1-20 remain in the application. Re-examination and re-consideration of the application is requested.

II. Prior Art Rejections

On page (2) of the Office Action, claims 1-20 were rejected under 35 U.S.C. §103(a) as being unpatentable over Auld et al., U.S. Patent No. 5,818,533 (Auld) in view of Ng et al., U.S. Patent No. 5,278,838 (Ng).

Specifically, the independent claims were rejected as follows:

In regard to Claim 1, Auld et al discloses an image processing apparatus and method having a computer-readable medium with computer readable instructions configured to store image data with redundant protection comprising:

- input means configured to receive an input stream of real-time digital video data (Figure 7a shows the input stream of encoded video data as further stated in Column 17 Lines 45-56);
- storage means for storing image data in an array of disks(Figure 7a step 506 shows the storage medium for storing the data); and
- processing means arranged to perform processing operations upon said image data (Figure 7a shows the processing means which processes the operations), wherein
- said input means received an input stream of real-time digital video data (Column 11 Lines 22-35 describes the input means receiving real time video data from an external source);
- said processing means performs a reading operation to read said data from said storage means, perform a data manipulation upon said video data and generate parity information to create protected video data (Column 20 Lines 52+ and describe the processing which performs the reading operations and data manipulations); and
- said processing means performs a second writing operation to write said protected video data to said storage means (Column 20 Lines 28+ describes the additional writing operation to write the protected video data to the storage means through the reconstruction of the B frame twice); however, fails to disclose a said processing means performs a first writing operation to write said video data to said storage array means in real-time without RAID calculations and without parity.

In regard to Claims 8, 15, and 19, Auld et al discloses an image processing apparatus and method, as previously discussed in Claim 1, with the additional limitation of calculating redundant parity data to generate protected image data (Column 20 Lines 52+ and describe the processing which performs the reading operations and data manipulations).

Applicant traverses the above rejections for one or more of the following reasons:

- (1) Auld and Ng, either alone or in combination, teach away from a delayed generation of parity;
- (2) Neither Auld nor Ng teach, disclose or suggest performing a write operation WITHOUT a RAID calculation;
- (3) Neither Auld nor Ng teach, disclose, or suggest performing a write operation WITHOUT parity;
- (4) Neither Auld nor Ng teach, disclose, or suggest a delayed generation of parity, wherein parity for video data stored in an array is generated during a read operation of the data in the array; and
- (5) Neither Auld nor Ng teach, disclose or suggest writing protected video data (that includes parity data) to a storage means during a second writing operation.

Independent claims 1, 8, and 15 are generally directed to storing image data with redundant protection. More specifically, the claims provide for delaying the performance of RAID calculations including writing parity until after certain processing performed. In this regard, an input stream of real-time digital video data is received. The video data is written to a disk storage array in real time without performing RAID calculations and without parity. In other words, the RAID calculations and parity are withheld during the initial writing operation. A read operation is then performed to read the video data from the storage array. Parity information is generated during the read operation to create protected video data that is then written to the storage array. Accordingly, the parity is not created until after a write operation (i.e., it is performed either during or after a read operation). Thus, as claimed, not only do the claims provide that parity and RAID calculations are not generated during a write operation, but the claims explicitly provide that the parity information is generated during a subsequent read operation of the data from a storage means. Further, the parity data is then written (as part of protected video data), to the storage array during a second write operation.

The cited reference does not teach nor suggest these various elements of Applicant's independent claims.

Auld merely describes an MPEG decoder system and method for decoding frames of a video sequence. The MPEG decoder includes frame reconstruction or decoder logic which operates to reconstruct a bi-directionally encoded (B) frame with minimal memory requirements. The MPEG decoder operates to decode or reconstruct the frame twice, once during each field display period.

The picture reconstruction unit operates to decode or reconstruct the B frame twice, once each during a first field time and a second field time. The first field time substantially corresponds to the time when the first or top field of the picture is displayed, and the second field time substantially corresponds to the time when the second or bottom field of the picture is displayed. Such a teaching obviates the necessity of storing the reconstructed B frame data, thus reducing memory requirements. Further, such a teaching eliminates the storage requirement of the B-frame without substantially increasing the bandwidth required from external semiconductor memory when compared to prior art methods. (See Abstract).

As can be seen from the above, Auld's specification is directed to and explicitly recites the ability to reduce memory requirements. In col. 20, lines 28-col. 21, line 3, Auld describes that because of the two reconstructions, parity is not written or read more than once. However, contrary to that asserted in the Office Action, such a teaching completely fails to even remotely suggest the generation of parity information to create protected video data wherein the parity is generated during a read operation. Further, such a teaching fails to contemplate, explicitly or implicitly, the performance of a second write operation to write protected video data to a storage array. Instead, Auld would actually serve to teach away from performing a second write operation since such a second write operation would actually increase memory requirements (in direct contrast to Auld's expressly stated objectives).

In addition to the above, Applicants note that an electronic search of Auld's text reveals that Auld's only reference to "parity" whatsoever is in col. 21, line 2. Such text merely provides "However, the number of accesses for write back and display does not increase, since pixels reconstructed for the opposite parity field do not need to be read or written more than once." Without even discussing parity anywhere else in the entire specification, Auld cannot possibly describe or suggest the ability to perform two write operations, one without parity and one with parity wherein such parity is created/generated during a read operation. In this regard, under any legal principal, Auld's lack of a description of the explicitly claimed subject matter cannot render the claimed invention obvious.

In fact, The Office Action admits that Auld fails to disclose performing a first writing operation to write video data to a storage array in real-time without RAID calculations and without parity. Instead, the Action relies on Ng to teach such an element. However, the Action merely

states that Ng's lack of a conformance to RAID 4 and 5 provides the ability to process **with** calculations and without parity (see page 4 of the Office Action). Applicants note that such a disclosure in the Office Action is in direct contrast to the presently claimed invention. In this regard, the presently claimed invention expressly requires that the first write operation is without RAID calculations and without parity. However, the Office Action states that Ng teaches to conduct a write operation with calculations. Such a teaching is clearly in direct opposition to the present invention and therefore the Office Action expressly teaches away from the presently claimed invention.

In addition to the above, Applicants note that Ng expressly describes the use of a parity group and is compliance with either RAID3, RAID4, and/or RAID5 - see col. 3, lines 29-38. Accordingly, Ng actually utilizes parity bits (using a dedicated parity disk in RAID3 or RAID4, or in distributed parity in a RAID5. However, regardless of which RAID system being utilized in Ng, the ability to perform two write operations - a first one to a storage array without RAID calculations and without parity, a second one to write parity information (i.e., generated during an intervening read operation) is not even remotely contemplated, explicitly or implicitly, anywhere in Ng (or Auld).

Further, the Office Action relies on a lack of Ng's conformance to a specific RAID level to render the present invention obvious. Such an attempt that utilizes a lack of a teaching in a cited reference is wholly improper. In this regard, under MPEP §2142 and 2143.03 "To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). "All words in a claim must be considered in judging the patentability of that claim against the prior art." *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970)." Further, under MPEP 2143, it is the Examiner's obligation to set forth a *prima facie* case of obviousness. As part of establishing the case, the Examiner must meet three criteria: he must show that some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

In view of the above, Applicants submit that the Examiner has not only failed to establish a prima facie case of obviousness, but the Examiner's reliance on a lack of a disclosure in a cited reference is in direct contrast to explicit legal requirements and is therefore in clear error. Again, the claims set forth explicit limitations that cannot merely be ignored or summarily overlooked. The cited references fail to teach such an explicit sequence of limitations (as claimed).

Applicants further submit that the previously cited references (either alone or in combination) fail to teach each of the specifically stated differences stated above.

Moreover, the various elements of Applicant's claimed invention together provide operational advantages over Auld and Ng. In addition, Applicant's invention solves problems not recognized by Auld and Ng.

Thus, Applicant submits that independent claims 1, 8, 15, and 19 are allowable over Auld and Ng. Further, dependent claims 2-7, 9-14, 16-18, and 20 are submitted to be allowable over Auld and Ng in the same manner, because they are dependent on independent claims 1, 8, 15, and 19, respectively, and thus contain all the limitations of the independent claims. In addition, dependent claims 2-7, 9-14, 16-18, and 20 recite additional novel elements not shown by Auld and Ng.

III. Conclusion

In view of the above, it is submitted that this application is now in good order for allowance and such allowance is respectfully solicited. Should the Examiner believe minor matters still remain that can be resolved in a telephone interview, the Examiner is urged to call Applicant's undersigned attorney.

Respectfully submitted,

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